

REMARKS

This Amendment responds to the Office Action mailed April 14, 2009. With this amendment, Applicants amend claim 7 to include the elements of withdrawn claim 3, from which it depended. No new matter is added with this amendment. Support for the amendment can be found throughout the specification and claims as filed, including, e.g., in previously presented claims 1-8.

Claims 1, 2, and 7 are currently pending and under consideration.

Information Disclosure Statements (IDS)

Applicants note that the Office indicates the IDS filed August 21, 2006 is not compliant with PTO rules.

In response, Applicants respectfully note that the relevance of JP 2002-519473 is set forth in the specification, as noted in the IDS. Applicants note that the IDS indicated, by page and line number, where the specification discussed the document. Applicants further note that the MPEP specifically authorizes that the “concise explanation” can be set forth in the specification. (See MPEP 609.04(a), “Each information disclosure statement must further include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information listed that is not in the English language. The concise explanation may be either separate from the specification or part of the specification. If the concise explanation is part of the specification, the IDS listing should include the page(s) or line(s) numbers where the concise explanation is located in the specification.”

Emphasis original.) Thus, with respect to this document, the IDS was compliant and Applicants respectfully request that the Office indicate consideration of this document in the next official communication.

Applicants also note that the IDS in question stated that JP 2895872 B2 was cited and discussed in the specification, specifically referring to pages and lines. Thus, the IDS was compliant with respect to this document as well. (Applicants also respectfully submit that an English language abstract was provided, as shown by the attached date-stamped mailroom receipt. As the Office apparently lost the abstract, Applicants attach another copy for the examiner's convenience.)

Applicants also note that the IDS in question stated that JP 2-117980 was cited and discussed in the specification, specifically referring to pages and lines. Thus, the IDS was compliant with respect to this document as well.

Applicants also note that the IDS in question stated that JP 3-165477 was cited and discussed in the specification, specifically referring to pages and lines. Thus, the IDS was compliant with respect to this document as well. (Applicants also respectfully submit that an English language abstract was provided, as shown by the attached date-stamped mailroom receipt. As the Office apparently lost the abstract, Applicants attach another copy for the examiner's convenience.)

In view of the foregoing, Applicants respectfully request that the Office indicate consideration of the documents previously provided to the Office in a manner as required by the Office. Applicants respectfully note that if the Office is unable to use the previously provided

Form PTO-1449, that Applicants will provide a new Form PTO-1449 so the examiner's consideration can be shown.

Restriction Requirement

Applicants note that the Examiner has maintained the restriction requirement with regard to Groups I-III, and made it final. Applicants reserve the right to file one or more divisional or continuation applications directed to the non-elected subject matter.

Claim Rejections – 35 U.S.C. § 103(a)

The Action rejects claims 1, 2, and 7 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Connell et al. (US 2001/0008169, referred to hereinafter as Connell) as evidenced by Kropp et al. (U.S. Patent No. 5,362,421). In response, Applicants respectfully disagree with the Office's determination regarding obviousness.

Applicants initially note that in an obviousness analysis, as stated in *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966), one must first determine the scope and content of the prior art. In other words, one must determine what the prior art teaches or fairly suggests to a person of ordinary skill in the art. The Patent Office is not entitled to rely on a piece of prior art for a teaching or disclosure it does not fairly put the public in possession of. Applicants respectfully submit that the Office has apparently mis-read or misinterpreted the art, and submit that the cited art does not stand for the propositions the Office attributes to it.

In the Action, the Office alleges that that Connell teaches an anisotropic adhesive layer comprising an adhesive composition as taught by Kropp et al. and conductive Ni or Ni-coated

metal particles that are in the same region of thickness within the adhesive layer. The Action alleges that Connell discloses the maximum thickness range the particles can occupy is one particle or 1.0 times the average particle size within the thickness of the adhesive layer.

Applicants submit that the Office's characterization, or interpretation, of the teachings of Connell is not correct. Applicants respectfully submit that Connell does not teach or fairly suggest to a person of ordinary skill in the art what the Action alleges.

Applicants submit that Connell teaches and fairly suggests to a person of ordinary skill in the art a method of making an anisotropic conductive adhesive comprising the step of placing conductive particles in dimples such that the conductive particles form a single layer in the dimples; Connell further teaches the step of forming an adhesive layer on the low adhesion surface of a dimpled tool such that the conductive particles in the dimples individually adhere to the adhesive layer, wherein the adhesive layer is substantially free from conductive materials other than the conductive particles (see Claim 27 of Connell). Also, Connell shows in the Examples section, paragraphs [0051] to [0066], and Figures 6 (a) and 6 (e), micrographs of dimpled tools made from using its disclosed methods. In paragraph [0032], Connell explicitly describes in the preferred embodiment, where the desired number of particles per particle site is more than one particle and that multiple particles provide redundancy as insurance against the occasionally missing or abnormally small particles that may lead to the risk of an unreliable electrode connection. Connell also teaches that only one conductive particle per particle site in the dimples can cause a risk.

In contradiction with the above-noted passage, Applicants note that Connell demonstrates that the produced particles are actually gold-coated polymeric spheres with an average diameters

of 4.9 μm and that the vast majority of the dimples contain only one particle (see paragraph [0064] and Figure 6 (c)). Figure 6 (c) shows that one conductive particle per particle site is present in the dimpled tool without contact with other particles before transferring the conductive particles to the adhesive layer. Connell also describes that the spacing of the dimple pattern is about 15 μm .

While claim 27 of Connell recites an anisotropic conductive adhesive wherein “the adhesive layer is substantially free from conductive materials other than the conductive particles,” which was made by “forming the adhesive layer on the low adhesion surface such that the conductive particles in the dimples individually adhere to the adhesive layer,” Connell fails to disclose how to obtain this embodiment. In other words, even if Connell suggests that a plurality of dimples of the dimpled tool should be filled with the conductive particles, Connell fails to teach how to obtain “a plurality of dimples of the dimpled tool ... filled with the conductive particles.” In addition, Connell does not teach whether the filled particles are all transferred to the adhesive layer. The evidence suggests that Connell did not obtain the anisotropic conductive adhesive sheet wherein 90% or more of the conductive particles are present without contact with other conductive particles according to claims of the present invention.

Applicants note that the efficiency of transfer of particles to an adhesive layer greatly depends on whether the depth of the dimples of the tool is less than, the same as, or larger than the particle size of the conductive particles. When the depth of the dimples is less than the particle size of the conductive particles, it is difficult as a matter of fact to place one particle per particle site. However, when the depth is larger than the particle size, it is difficult to transfer

the particles to the adhesive layer, although it might be possible to place one particle per particle site. When this occurs, both insulating properties and a large number of adhered particles are not achieved.

Applicants note that when the depth of the dimples is the same as the particle size of the conductive particles, it is expected that the conductive particles would be most efficiently distributed in a rate of one particle per particle site in the dimples. In fact, Applicants further submit that if the conductive particles could be placed substantially at a rate of one particle per particle site in the dimples by following the teachings of Connell, Applicants believe that it is likely that most of the particles would not, and could not, be transferred to the adhesive layer in a manner that would meet the language of the present claims. Applicants' belief in this regard was confirmed through testing by Mr. Otani, one of the inventors of the present invention. In the experiment, which is described in a Declaration submitted herewith, the disclosure of Connell was used to prepare an anisotropic conductive adhesive and test its properties with regard to the average particle size and the distance between the particles. The results of the experiment proved true the assumption that when practicing the disclosure of Connell, most of the particles cannot be transferred to the adhesive layer.

The test conducted by Mr. Otani is illustrated in the Declaration submitted (under 37 C.F.R. § 1.132) herewith. This Declaration describes the preparation of the dimpled tool, the preparation of the adhesive layer, filling the dimpled tool with the conductive particles, application of the adhesive layer, and removal of the conductive adhesive layer, in compliance with the disclosure of Connell.

Briefly, in the experiment, twenty (20) particles were arbitrarily selected in the anisotropic conductive adhesive sheet that was made, and the particle distances between each of the twenty particles and the closest six (6) particles to each particle were measured, and then the average distance as a whole was obtained. The average distance was calculated as 40.3 μm , which is 8.06 times the average particle size of the conductive particles of 5.0 μm , in the claimed invention. These calculations are inconsistent with the Office's assertions relating to Connell, and do not meet the limitations of the present claims.

Thus, Applicants respectfully submit that when Connell's teachings are followed, the result is different from that disclosed or suggested by Connell. In particular, when the conductive particles were transferred to the adhesive layer, the resulting adhesive sheet did not meet the recitations of "90% or more of the conductive particles ... present without contact with other conductive particles" and "the average particle distance between adjacent conductive particles is at least once but five times or less the average particle size and not greater than 20 μm ." Thus, as noted by the Declaration, no anisotropic conductive adhesive sheet of the present invention could be obtained from the disclosure of Connell.

In conclusion, Applicants respectfully submit that the foregoing remarks, and the content of the attached Declaration, demonstrate that Connell does not teach or fairly suggest the propositions the Office attributes to it. In addition, Applicants further submit that one of ordinary skill in the art, when reading Connell, would not consider it possible to place one particle in one dimple, followed by transfer of them to the adhesive layer, to obtain the desired anisotropic conductive adhesive sheet of the present invention. The adhesive sheet obtained by the disclosure of Connell is not consistent with teachings the Office attributes to Connell.

In view of the foregoing arguments, Applicants submit that Office cannot rely on Connell to support a finding of obviousness because Connell does not stand for, teach, or fairly suggest to one of ordinary skill in the art what the Office alleges.

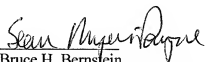
Applicants note that Kopp et al. fails to teach the claimed invention, and even if combined with Connell, Kopp et al. fails to supplement the teachings of Connell to teach the present invention.

In view of the foregoing remarks, amendments, and the attached Declaration, Applicants respectfully request withdrawal of the outstanding rejections for obviousness.

CONCLUSION

In view of the foregoing, Applicants respectfully request the Examiner to reconsider and withdraw the rejections of record, and allow all the pending claims.

Respectfully Submitted,
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